

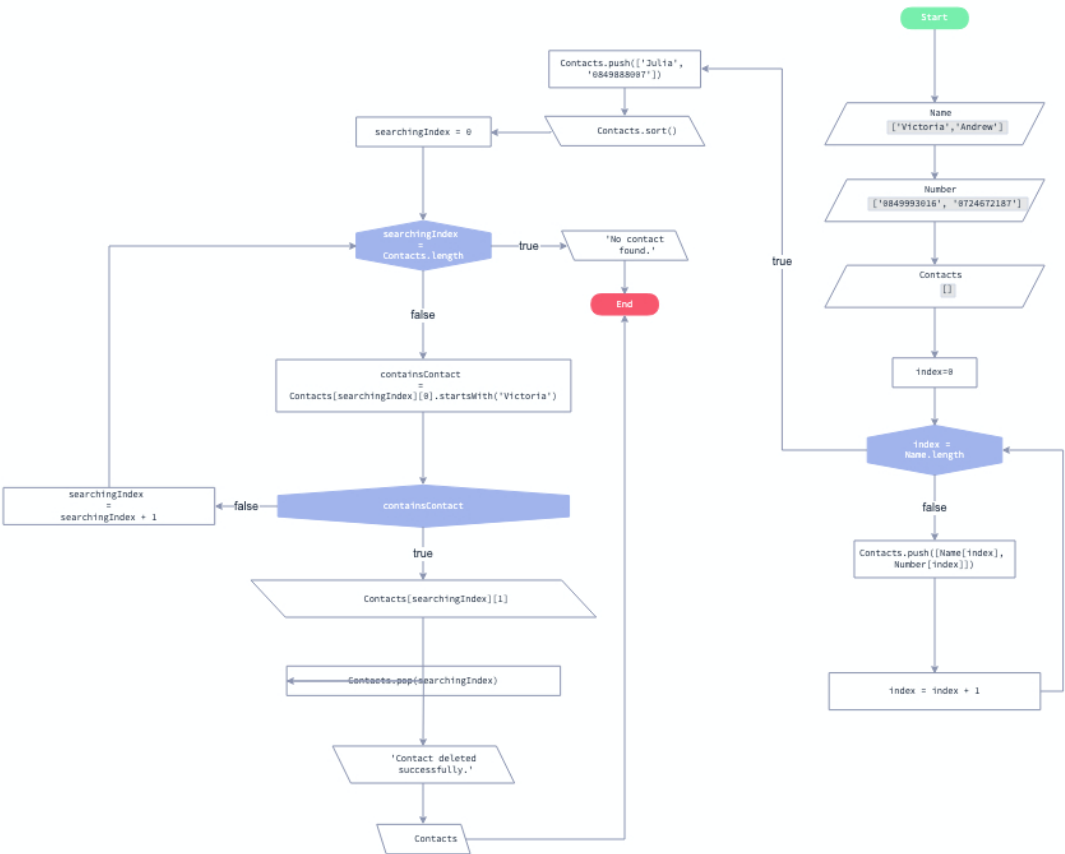
An algorithmic solution for a contact book application

Algorithms are a set of instructions that can be understood by human beings and are executed by a computer when trying to solve a problem (Bullinaria, 2019). Algorithms incorporate data structures to help a computer effectively perform a certain task. The following algorithm is implemented using a flowchart/pseudocode and represents a contact book application. The objective of a contact book is to insert an individual's contact details, organise their information in alphabetical order, search for a desired individual and finally provide the ability to delete an existing contact.

The role of data structures

There are two different types of data structures: primitive data structures and compound data structures. Simple data structures comprise of universal data types, such as integers and characters. Compound data structures consist of more complex data types, such as arrays. Furthermore, compound data structures can be arranged in a linear or non-linear manner. Linear data structures are used to store data in a programs memory in the form of queues and stacks. Alternatively, non-linear data structures are organised in the form of trees that are connected by branches and assembled as a collection of data (Glenn Brookshear & Brylow, 2019).

The following flowchart is a visual representation of an algorithm that is designed to execute tasks associated with creating a contact book.



CONSOLE	VARIABLES
Output0: [[Andrew,0724672187], [Julia,0849888007], [Victoria,0849993016]]	1st input (Name): [Victoria, Andrew]
Output1: '0849993016'	2nd input (Number): [0849993016, 0724672187]
Output2: 'Contact deleted successfully.'	3rd input (Contacts): [[Andrew,0724672187], [Julia,0849888007]]
Output3: [[Andrew,0724672187], [Julia,0849888007]]	index: 2
	searchingIndex: 2
	containsContact: true

100% (1:0)

Test Plan

The algorithm's structure comprises of the following:

1. An input block displays an entry variable, 'Name', which is made of up of an array of strings.
2. A second input block is an entry variable, 'Number', which is made of up of an array of strings.
3. A third variable, 'Contacts' is created and is made up of an empty array.
4. Introduce an operation that sets our counter to 0.
5. A Boolean expression is created to determine whether the condition is true or false.
6. If the statement is false, it activates a continuous loop to run the program until all the elements have been executed based on the length of the array, 'Name'.
7. An output block displays a push method, forcing the creation of a new array consisting of both the name and number of an individual, separated by a comma.
8. An operation block is created to continue the loop counter by an increment of 1 and allow the program to continue running.
9. The process repeats until the condition returns a value of true.
10. If true, the push method is used to create an additional contact.
11. After the creation of a new contact, the sort method arranges the targeted data into alphabetical order, which is displayed in the console.
12. Introduce an operation that sets the search operation to begin at the first occurrence in the array.

13. The boolean operated is created to determine whether the condition is true or false and is initiates the program to run in a loop until it reaches the number of contacts saved in the database.
14. If true, a message will display in the console informing the user that the contact has not been located.
15. If false, the creation of a new variable "containsContact" is created and stores certain values that enable the program to search for the first index in an array containing the words, 'Victoria'.
16. A condition is created where the decision is made as to whether or not 'Victoria' is found at index 0.
17. If false, an operation is executed to continue the loop counter and increase it by an increment of 1.
18. The loop continues until it has gone through the entire contact list.
19. The condition becomes true once the program has found 'Victoria' amongst all saved contacts. It then returns the number associated with the searched contact in the console.
20. Once the contact has been found, the pop method is executed to delete the desired contact, according to its index position in the array.
21. A message is then displayed in the console informing the user that their contact has been deleted successfully.
22. An output block displays the remaining contacts in the console.
23. The program comes to an end.

In conclusion, software design is instrumental when solving a problem (Xinogalas, S). It provides a visual representation of an algorithmic process that can be executed by

a central processing unit using different programming languages. Overall, the purpose of the application is to store and manipulate data whilst following a set of rules to complete a task.

References

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